



**Pakistan Institute
of Public Finance Accountants**

Model Solutions

**Audit of Public Sector Power
Generation, Transmission and
Distribution (including NEPRA, CPGCL,
NTDC, IPPS, CPPA etc) Companies**

AGP

May Exam-2026

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Q.1. Impact of IPPs on economy of Pakistan by Independent Power Producers (IPPs) have had a profound and controversial impact on Pakistan's economy, acting as a double-edged sword that solved immediate energy shortages while creating long-term, structural financial crises. The model, initiated in the 1990s, allowed private companies to generate electricity with government guarantees.

Key Impacts on the Economy:

Ballooning Circular Debt: The most critical impact is the accumulation of unsustainable circular debt in the energy sector, which crossed Rs2.5 trillion by 2021 and continued to rise, crippling the government's ability to fund other sectors.

High Capacity Payments: The government pays IPPs for "capacity" (the ability to produce electricity) rather than actual energy produced, often under "Take or Pay" contracts. These payments reached over Rs2.1 trillion in fiscal year 2024, despite substantial idle power capacity.

Dollar-Indexed Returns: Many contracts were structured in US dollars, meaning the devaluation of the Pakistani Rupee (PKR) significantly increased the cost of payments, causing a surge in debt and pressuring foreign exchange reserves.

High Electricity Tariffs: These costs are passed on to consumers and industries, resulting in high electricity prices. This reduces firm profitability, chokes investment, and makes Pakistani exports less competitive in the global market.

Energy Mix Inefficiency: Over-reliance on thermal IPPs running on imported fuel increased the import bill, causing a negative impact on the balance of payments.

Recent Developments and Reforms:

Following severe public outrage and financial pressure, the government has begun renegotiating contracts.

Contract Renegotiations: Several IPPs have renegotiated to "Take and Pay" models or reduced their returns, with 5 IPPs opting for early termination, saving billions in projected costs.

Shift in Policy: The government is moving towards a competitive, market-based system (CTBCM) that encourages renewable energy and reduces state-guaranteed, high-cost, and inflexible contracts.

Q.2. The most of projects under the Water and Power Development Authority (WAPDA) in Pakistan experience significant time and cost overruns due to a combination of financial, technical, and managerial issues, often leading to projects taking 2–3 times longer and costing substantially more than originally estimated.

Key reasons for these overruns include:

1. Financial Constraints and Delayed Funding

Irregular Fund Release: A major factor is the delay in releasing funds by the government, which halts progress and allows inflation to increase the final cost.

Inconsistent Cash Flow: "Inconsistent Cash Flow" has been identified as a highly significant



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factor, severely impacting project timelines.

High Inflation: Inflation in raw materials and labor costs during prolonged delays raises the expense of construction.

2. Planning and Technical Failures

Initiation Without Proper Site Investigation: Projects are frequently initiated without comprehensive site investigation, leading to unforeseen geological or technical problems during construction, which cause major delays.

Frequent Design Changes: Changes in design during construction (scope creep) are a primary reason for both time delays and cost increases.

Unrealistic Scheduling: Initial timelines are often overly optimistic, failing to account for risks, resulting in inevitable schedule overruns.

3. Land Acquisition and Social Issues

Land Acquisition Delays: Challenges in acquiring land and settling resettlement issues cause significant delays, such as in the Diamer-Basha and Dasu projects.

Public Opposition: Local resistance, environmental concerns, and disputes over community resettlement can halt project activities.

4. Management and Administrative Weaknesses

Lack of Political Will/Transparency: A lack of sustained political commitment, coupled with issues of transparency, leads to slow decision-making.

Poor Contracting Management: Weaknesses in contract management and slow decision-making by authorities in addressing contractual disputes contribute to project stoppages.

Inadequate Contractor Resource Mobilization: Contractors sometimes fail to mobilize adequate machinery or labor, leading to slow progress.

5. Security and External Factors

Law and Order Situations: Unstable security conditions, particularly in remote areas where mega-projects are built, have caused work suspensions.

Environmental Challenges: Inclement weather conditions, including flooding or heavy rainfall, can also delay projects.

Q.3. The Fuel Cost Adjustment (FCA) formula determines monthly electricity tariff changes based on the variance between actual fuel costs and reference fuel costs, usually calculated as:
FCA = (Actual Fuel Cost Component - Reference Fuel Cost Component)



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This adjustment allows utilities to pass on fluctuating costs of fuel (coal, gas, oil) for power generation directly to consumers, approved monthly by regulators like NEPRA.

Key Components of FCA

Actual Fuel Cost Component: The actual cost of fuel consumed to generate electricity in a specific month.

Reference Fuel Cost Component: The projected fuel cost set at the beginning of the year for tariff determination.

Generation Mix/Technical Losses: The formula often considers changes in the energy mix (e.g., more expensive fuel usage) and transmission losses.

Application: If actual costs are higher than the reference, the difference is charged to consumers; if lower, a credit is applied.

Q.4.

The National Transmission and Despatch Company (NTDC) is a state-owned public limited company in Pakistan responsible for the transmission, dispatch, and grid management of high-voltage electricity (500KV and 220KV). Incorporated in 1998 following the unbundling of WAPDA, it acts as the vital link between power generation plants and distribution companies (DISCOs).

As of late 2024, the government initiated a major restructuring to divide NTDC into three distinct entities to address chronic inefficiencies, project delays, and financial losses.

Role of NTDC

Before its restructuring, NTDC played the following key roles:

Transmission Infrastructure Development: Constructing, maintaining, and operating 500KV and 220KV grid stations and transmission lines.

Grid Operation & Maintenance: Operating the national grid to ensure a stable, secure, and continuous supply of power.

Power Evacuation: Transporting electricity from power plants (hydro, thermal, nuclear) to regional load centers.

System Balancing: Managing the national power control center (NPCC) to balance supply and demand in real-time.

Need for Restructuring

The restructuring was initiated due to severe performance issues that caused rising electricity tariffs and inefficiency:



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Persistent Delays: Power projects scheduled for 2-3 years were often delayed to 7-8 years.

Cost Overruns: Inefficient project management leading to higher costs, affecting consumer rates.

Monopoly & Inefficiency: A lack of competition and poor maintenance of aging infrastructure.

Restructuring Plan (3-Entity Structure)

The Federal Cabinet approved dividing NTDC into three separate entities by early 2025 to increase transparency and competitiveness:

Independent System and Market Operator (ISMO):

Focus: Merges the NPCC (System Operator) and CPPA-G to handle competitive power trading, market management, and grid balancing.

Goal: Ensure neutrality, fair competition, and transparency in power purchase.

National Grid Company of Pakistan (NGCP):

Focus: Rebranded from the existing NTDC, this company will manage, operate, and maintain the existing transmission infrastructure (grid stations and lines).

Goal: Improve efficiency in power transmission.

Energy Infrastructure Development and Management Company (EIDMC):

Focus: A dedicated company responsible for planning, developing, and executing new high-voltage transmission projects.

Goal: Ensure timely, cost-effective completion of new infrastructure.

This restructuring is part of a broader Pakistan energy sector reform supported by the IMF and international development partners.

Q.5. Power Distribution Companies (DISCOs) in Pakistan are currently undergoing a major restructuring, with their boards reconstituted to include sector experts and corporate professionals in an attempt to improve governance. However, these companies continue to face severe financial distress and operational inefficiencies despite these reforms.

Financial Performance: In FY 2024–25, DISCOs incurred a cumulative loss of approximately Rs. 472 billion. This was broken down into Rs. 265 billion from transmission and distribution (T&D) losses and Rs. 207 billion due to low bill recoveries.

Persistent Inefficiencies: No DISCO met their NEPRA-set T&D loss targets, with overall losses standing around 17.55%—significantly higher than the 11.43% benchmark allowed. PESCO,



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QESCO, SEPCO, and HESCO are identified as the worst performers.

Board Restructuring: The government has reconstituted the boards of most DISCOs, including expert members, with the stated goal of improving operational performance and reducing reliance on the national treasury. However, these new boards have been criticized by the Economic Coordination Committee (ECC) for failing to achieve targeted performance improvements, indicating that structural issues persist despite improved governance composition.

Causes of Losses: Key factors contributing to these losses include electricity theft, poor recovery of payments, and high line losses, which exacerbate the national circular debt.

Regulatory Action: Due to the continued underperformance, NEPRA has initiated legal action against several DISCOs, imposing fines and proposing further reforms, such as privatization or the restructuring of the companies into smaller units.

Q.6. The National Electric Power Regulatory Authority (NEPRA) in Pakistan determines electricity tariffs based on a **cost-plus methodology**, aiming to ensure full cost recovery for utility companies while balancing consumer affordability and operational efficiency.

The key factors and components considered by NEPRA include:

1. Power Purchase Price (PPP)

This is the largest component of the tariff, representing the cost of electricity purchased from power producers. It includes:

Energy Charge (Fuel Cost): The actual cost of fuel used to generate electricity. This is a "pass-through" item, meaning it is passed directly to consumers and adjusted monthly (Fuel Charge Adjustment - FCA).

Capacity Charges: Fixed costs paid to Independent Power Producers (IPPs) and GENCOs for making power available, regardless of whether it is used or not. This includes debt servicing, insurance, and return on equity.

2. Distribution Margin (DM)

This covers the operating costs of Distribution Companies (DISCOs) to deliver electricity to consumers. It includes:

Return on Rate Base (RORB): A post-tax return on the company's investment (assets).

Depreciation Expense: Depreciation of fixed assets.

Operations, Maintenance & Repair Expenses: Including employee salaries and benefits.

3. Transmission and Distribution (T&D) Losses



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NEPRA allows a specific percentage of T&D losses to be included in the tariff based on targets set for the distribution company.

Only **technical losses** (within specified limits) are generally allowed, while non-technical losses (theft) are usually disallowed.

If losses exceed the target, the company bears the cost.

4. Prior Year Adjustments (PYA)

NEPRA adjusts the tariff based on the over-recovery or under-recovery of revenue in previous years.

5. Regulatory Factors and Policies

National Electricity Policy/Plan: The guidelines set by the Government.

Targeting Consumer Classes: The tariff structure differentiates between residential, commercial, industrial, and agricultural consumers.

Cross-Subsidies: Higher consumption consumers or industrial consumers often pay higher rates to subsidize lower-end users, such as residential users with low consumption (lifeline consumers).

Inflation & Exchange Rates: Variable components are indexed to inflation and rupee devaluation.

Time-of-Use (ToU): Higher rates apply during peak hours compared to off-peak hours.

6. Prudence Check

NEPRA reviews costs based on the principle of "prudence"—evaluating if expenses were legitimate, necessary, and efficiently incurred.

The final applicable consumer tariff is often different from the determined tariff because the Federal Government may adjust it, typically to keep it uniform across the country.
